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## **Local access to national and international information resources in science and technology: a Malaysian perspective**

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## LOCAL ACCESS TO NATIONAL AND INTERNATIONAL INFORMATION RESOURCES IN SCIENCE AND TECHNOLOGY: A MALAYSIAN PERSPECTIVE

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If one is appreciative of history and the messages that are transmitted through time it is not surprising to find that thoughts and ideas generated today have already been thought of earlier in the context of the situation at that time. This applies to librarianship as it does probably to other fields of endeavour. We are all familiar with what Samuel Johnson said in the eighteenth century on the second kind of knowledge, which applied to librarianship then as it does today. In the course of testing three hypotheses on the role of the librarian, Wilkinson<sup>1</sup>, in extracting information from Winger<sup>2</sup>, quotes that as early as the 17th century the writings of Gabriel Naude reveal "a concept of the librarian as a specialist in the sources of information and in the service of a broader and more intensive scholarship". She goes on to state that in her opinion the best definition on the role of the librarian appears in Dury's writings<sup>3</sup> in the 17th century which is the "channelling the sources of knowledge (or information) to the appropriate enquiries ..... as a master of the sources of learning, both recorded and otherwise, whose task it is to organise those sources and direct scholars (i.e. users) in their effective use".

Looking at librarianship today, recent opinions have been expressed that "library growth appears to have over-reached itself and support for it is eroding". Murray<sup>4</sup> goes on to say that the central goal of libraries has become obscured and that it was time they "concentrate on what they do best and shuck off services that do not contribute to that goal". He is obviously making reference to the wide range of activities that libraries are involved in today.

The focus of librarianship is to acquire knowledge of the sources of information with a view towards bringing together a needful user and the appropriate source of information (or the information itself) within a reasonable period of time (if not immediately). The theme of the conference therefore is most apt as it attempts to set future directions for the profession in the light of technological developments and the relative role that libraries should play. Relating to the conference theme, I shall focus my attention to the Southeast Asian scene in the context of local access to information resources and a forecast of possible future trends.



Southeast Asia (SEA) is recognised as the fastest growing market in the commercial world today. With a few exceptions, the average economic growth rate of most of the countries averages between five and eight percent. The determination of national budgetary allocations is largely based by the set priorities of the respective countries of SEA. Social amenities and requirements such as food, employment, housing, education, medical health and sanitation still take top priority but with differences of emphases in each of the countries. Largely agricultural based economies, the countries of SEA are gradually experiencing a shift to industrialization, aided by technology transfer from the more developed countries. While the desire to achieve overall social development to improve the quality of life of the people is strong, limited financial resources naturally require appropriate planning and discriminate choice of areas to be developed.

With the possible exception of Singapore, all the other countries in SEA have accorded a lower priority to library and information services as compared to other more needy services. In spite of this, libraries of all types have developed in the region with some outstanding results. Based on the availability of information on developments in the countries of SEA, I shall restrict myself to the countries of Indonesia, the Philippines, Singapore, Thailand and Malaysia.

Information resources may be broadly viewed as comprising of sources, systems, services and products as they relate to the generation, storage, utilisation, dissemination of information and the mechanisms for its transfer. Conscious of the broad scope of the topic, I shall concentrate on institutional information resources in the region, their services and products, and the infrastructure available to enable a two way access and transfer of information.

The 1975 account of library developments in SEA as related in The Barefoot Librarian<sup>5</sup> still holds good today if one allows for general improvement over the last ten years. A cross-sectional account of the development of library and information services from the seventies to date is recorded in the various CONSAL proceedings that have been published.<sup>6-11</sup> The Conference of Southeast Asian Librarians, better known as CONSAL, is best described by Hedwig Anuar in her opening speech as Chairman of CONSAL VI as

..... ties of friendship, mutual respect and understanding, forged through an exchange of information and ideas regarding our library experiences, have come to form the basis for working together successfully on a growing number of national and regional projects for which CONSAL has served directly or indirectly as a catalyst.



A cursory survey of library development in Southeast Asia, with the possible exception of Singapore, indicates that

- The national libraries are going through various stages of development, which while encouraging, have not yet brought them to a stage where they are able to co-ordinate on a national basis the development and utilisation of library resources in their respective countries.
- The development of public libraries leaves much to be desired.
- There exist many special libraries with a fair number in the field of science and technology. They show disparate levels of development.
- The academic libraries and in particular the university libraries are the ones that are well developed and possess some of the better collections.

The special libraries and the university libraries in the region may be considered as significant sources of information in science and technology. The services of these institutions are largely restricted to the population of their parent body. Considering the varying degrees of developments of these libraries (depending on the financial and other support provided) their potential to open their doors to other users in the country or region is limited, as they have problems of their own to contend with.

Library co-operation and resource sharing, which are very much in vogue, imply among other things the following:-

- A sense of commitment towards projected goals.
- Agreement to allocate resources towards the achievement of the goals desired.
- Keeping up with deadlines.
- Lots of tolerance, understanding and good faith.
- Always keeping in mind the eventual benefits of joint enterprise.

As Lim has rightly stated, there have been difficulties experienced in implementing resource sharing of materials and in embarking on co-operative acquisitions programmes. Regardless, co-operation to provide greater bibliographic access to library holdings and regional imprints through shared efforts have been quite successful. Some of the projects which incorporate scientific sources of information and which have been elaborated upon by Lim<sup>12</sup> are given below:

- International Serials Data System - Southeast Asia (ISDS-SEA).
- The Masterlist of Southeast Asian Microforms.
- The SEAPRINT project.

Another project which needs mention is the National Libraries and Documentation Centre - Southeast Asia (NLDC-SEA) Consortium. Hedwig Anuar<sup>13</sup> sets out the scope and limitations of this project. The project is aimed at tackling the problem of access to indigenous publications in the region and the seeking of possible solutions to this problem.



At the national level, each of the countries have undertaken the indexing of their respective periodicals and newspapers. This activity has either been undertaken by a single organisation or on a joint basis with several organisations participating. Appendix A gives a list of some of the products of this activity.

As a result of demand, anticipated need, or initiatives from international bodies, a number of information systems and services have been set up in the region. A brief description of some of them is given below.

### Agriculture

The agricultural sector in Southeast Asia, which contributes in a big way to the Gross National Product of each country, has demands for information which must be met. The advent of AGRIS (The International Information System for Agricultural Sciences and Technology) saw the establishment of National AGRIS Centres throughout the world including Southeast Asia. In addition, a Regional AGRIS Centre was established at the Agricultural Information Bank for Asia (AIBA) which is a project of SEARCA (Southeast Asian Regional Center for Graduate Study and Research in Agriculture) based in the Philippines. This agricultural information network which started in 1975 has been aided with funding from the IDRC (International Development Research Centre), a Canadian organisation.

The establishment of AGRIS has had the effect<sup>14</sup> of ensuring that agricultural literature has been documented on a national basis as well as ensuring greater awareness through AGRINDEX, its monthly world bibliography of agricultural literature, on developments all round the world. The region, in addition, produces AGRIASIA, a quarterly bibliography of mainly Southeast Asian agriculture including entries not found in AGRINDEX. The AGRIS and AGRIASIA data base is maintained by AIBA and services such as SDI and retrospective searches are made available for a fee. AIBA is advised by a consultative committee comprised of heads of the National AGRIS Centres. Joint projects are undertaken by this network and currently the problem of physical access to agricultural information is being given top priority.

The Buffalo Information Centre located at Kasetsart University, Thailand, is another initiative by IDRC to establish information systems in the third world. Established a few years ago, the centre attempts to document world information on the buffalo, produces a newsletter comprising scientific articles and abstract bibliographies. Other services are currently being planned for implementation.

The establishment of an Agricultural Information System, or AIS, by the Department of Agriculture (DOA) in Malaysia is an interesting development which started a few years ago. Using a relational database management system, pertinent data has been stored for use by extension agents as well as those at the planning and policy making levels. Data on the following subjects is currently available:-



Soil Survey	Farmers
Soil Crop Suitability	Crop Protection
Fertilizers	Coconut
Padi Cultivation	Farm Management
Farm Machinery	Quarantine
Crops	Indices
Field Stations	DOA staff

Serious consideration is currently being given to making the AIS or parts of it available for public use through the Malaysian Packet Switching network recently launched by the Telecommunications Department.

To help countries in the region solve problems concerning the supply, marketing, distribution and use of fertilizers, three United Nations Organisations, namely The Economic and Social Commission for Asia and the Pacific (ESCAP), the Food and Agriculture Organisation (FAO) and United Nations Industrial Development Organisations (UNIDO), have worked together to establish (FADINAP) (The Fertilizer Advisory, Development and Information Network for Asia and the Pacific). The network, established in 1978, has more than eighteen countries which participate in the network activities through designated national technical liaison offices. In addition to collecting, analysing and distributing relevant information, FADINAP also aids in the training of manpower and provides project identification and advisory services. Among some of its publications are:-

- Agro-Chemical News in Brief
- Fertilizer Price and Trade Information Bulletin
- Calendar of meetings on agro-chemicals
- Special reports from time to time
- The Regional Information Support Service (RISS)

### Fisheries

The fisheries industry is receiving greater attention today than it did previously. Taking advantage of their geographical location and the abundance of natural resources, SEA countries have realised the potential of this long neglected sector. Fishermen and their communities required as much help as the farmers were getting, if not more. The impetus given to fisheries in each of the countries has naturally resulted in a demand for information. SEA alone has international organisations like the International Center for Living Aquatic Resources Management (ICLARM) based in the Philippines, the FAO Agricultural Development and Co-ordination Programme (ADCP) based in the Philippines and Thailand, Southeast Asian Fisheries Development Centre (SEAFDEC) based in Thailand, Singapore and the Philippines. The services offered by these organisations is accounted for in the April 1984 issue of ICLARM Newsletter.



<u>Organisation</u>	<u>Name of Service</u>	<u>Notes</u>
ICLARM	ICLARM's Selective Information Service	<ol style="list-style-type: none"> <li>1. Prepares and commissions bibliographies and reviews</li> <li>2. Question/answer service on subjects like aquaculture, resource management and small scale fisheries.</li> </ol>
ADCP (FAO)	Aquaculture Information System (AQUIS)	<ol style="list-style-type: none"> <li>1. Maintains experimental data on milkfish schrimp, culture systems and a variety of other local fish.</li> <li>2. Provides data and information on aspects of production, economics and identification of species.</li> </ol>
University of the Philippines, Visayas	Philippines Aquatic Sciences and Fisheries Information System (PASFIS)	<ol style="list-style-type: none"> <li>1. Responsibilities include preparation and commissioning of current awareness material, reports and bibliographies</li> <li>2. Aimed to support needs of policy makers, entrepreneurs, industrialists, extension workers and researchers.</li> </ol>
SEAFDEC	Southeast Asian Fisheries Information Service (SAFIS)	<ol style="list-style-type: none"> <li>1. Began in 1981 as a means of enhancing the the relationship between extension workers and small scale fishermen/fishfarmers in the region.</li> <li>2. Major activity is translation of extension material. Over 500 such translations have thus far been completed for free distribution to all those who need it.</li> </ol>
SEAFDEC	Southeast Asian Fisheries Information Service (SEAFIS)	<ol style="list-style-type: none"> <li>1. Provision of library and information services to all those in the region involved in the fisheries industry on aspects of Southeast Asian Fisheries.</li> <li>2. Serves as the Southeast Asian regional input centre for the FAO Aquatic Sciences and Fisheries Information System (ASFIS)</li> </ol>
FAO	INFOFISH	<ol style="list-style-type: none"> <li>1. Located in Kuala Lumpur it covers the fisheries trade in Asia and the Pacific.</li> <li>2. Provides Marketing Information Service by maintaining a database of relevant information, produces the Infofish Marketing digest, carries out special studies and training programmes.</li> <li>3. Has a Trade Promotion Service by maintaining a Register of Exporters/producers and importers, producing product catalogues and the Infofish trade news. It answers trade enquiries and brings buyers and sellers together.</li> </ol>



4. Supplies technical assistance on all phases of fish handling and marketing to meet the needs of small and medium sized producers. Maintains up-to-date roster of technical experts and consulting forms in the fishery industry.

### Science and Technology

Growing industrialisation in each of the Southeast Asian countries does not seem to have made a corresponding demand for information. One possible explanation for this state of affairs could be that foreign companies in establishing their production units in the SEA countries depended on their home countries for R & D work. Without R & D the demand for Scientific and Technical Information was minimal. With the establishment of National Science Councils or their equivalent and National Standards Institutions in each of the SEA countries greater attention has been paid to the conduct of research. A few information systems worthy of mention are as follows:-

Technology Resource Centre Manila, Philippines	Technobank Program	<ol style="list-style-type: none"> <li>1. To develop national information capability so as to promote the development, transfer, adaptation and application of technology</li> <li>2. To establish a network of local sources of scientific information.</li> <li>3. Services include question/answer service, literature searches, access to technical information from within and outside the country. Information analysis, data banking.</li> </ol>
Singapore Institute for Standards and Industrial Research	Industrial Technical Information Service (ITIS)	<ol style="list-style-type: none"> <li>1. To cater for the scientific and technological information needs of commerce and industry</li> <li>2. Offers services such as current awareness, question and answer, industrial liaison service, document procurement and specialised information packaged service.</li> </ol>
Rubber Research Institute of Malaysia	Natural Rubber Bibliographic On-line Information Storage and Retrieval System (NR-BLISS)	<ol style="list-style-type: none"> <li>1. To provide a comprehensive coverage of all bibliographical and other information related to natural rubber.</li> <li>2. To cater for the information needs of the natural rubber industry.</li> </ol>
Forest Research Institute Kepong Malaysia	Rattan Information Centre (RIC)	<ol style="list-style-type: none"> <li>1. To build a comprehensive collection on Rattan and to disseminate information to all those involved in the Rattan Industry.</li> <li>2. Provides question and answer services, translation services, perform specific searches etc.</li> <li>3. Produce publications including the RIC Bulletin; State-of-the art-reviews and relevant directories.</li> </ol>



Asian  
Institute of  
Technology  
(AIT)  
Bangkok  
Thailand

Asian  
Information  
Centre for  
geotechnical  
Engineering  
(AGE)

Provides geotechnical information to developing countries through seven serial publications.

International  
Ferrocement  
Information  
Centre (IFIC)

Collects and disseminates information of ferrocement technology and its applications. Publishes monographs bibliographies, reports, state-of-the-art-reviews and a do-it-yourself series.

Renewable  
Energy  
Information  
Resources  
(RERIC)

Aims at answering renewable energy questions with particular regard to application in tropical regions. Covers topics such as solar energy, biofuels, wind energy and small scale hydropower. Its regular publications are a quarterly newsletter, a journal and occasional publications.

A proposed land information system for Malaysia is to be established soon. Abdul Majid bin Mohamed<sup>17</sup> gives details of the proposal, the first phase of which is currently being implemented. The system includes the implementation of Computer Assisted Land System (CALS) and the Computer Assisted Mapping System (CAMS) designed to maintain a data bank of information on topics including cadastral and topographic information, land capability, land valuation, infrastructure facility and land use.

It would be pertinent to state here that the Association of Southeast Asian Nations or ASEAN, which has its secretariat located at Jakarta, has established a number of ASEAN Committees including one on Science and Technology, which act as catalysts to initiate or influence a wide variety of programmes for the mutual good of the member countries.

It is evident from the foregoing that despite being placed on lower priority levels, libraries and information resources have developed at a reasonable rate. While some are more fortunate than others, on the average, financial support given is inadequate resulting in the maintenance of poor collections and insufficient staff to meet the anticipated demand for their services. Looking back it is amazing how, in spite of language differences, differing organisational structures to contend with, and a number of other drawbacks, the professionals in SEA, combining co-operative goodwill, plenty of tolerance and tenacity, have aspired to meet set objectives for mutual benefit, and have met with a fair degree of success. It is heartening to note that there is a general trend all around, especially at management level, to establish information systems taking advantage of this wave of information technology that is sweeping us.



Having noted the existence of information resources in the region it would be in order to look at the current and future developments in communications technology, which is so necessary for the transfer of information from one point to another. There is a great deal written about the information age and how information would be the most powerful of resources, placing those that control it in very powerful situations. In keeping with the assumption, that the onslaught of information technology is considered to be the next revolution after the industrial one, how can countries which have not yet seen the full effect of industrialization cope with this new assault. The SEA countries, like many non-industrialized nations, must learn to cope with the effects of both these changes occurring simultaneously, applying them advantageously to their gain. Whether or not they will succeed, only time will tell.

The telephone for many years has been practically synonymous with telecommunications. The development of telecommunications infrastructure in SEA is still an on-going one. Even though the telephone network in most countries has extended to the rural areas the quality of voice grade communication still needs great improvement. There has been an observable change in the last five years in the telecommunication industry, which now plays a major role in the communication process, so badly needed in to-day's world of high technology. Non-voice message services like telex have largely been used by government agencies and commercial bodies.

The region witnesses today a transition which could be summarised as follows:-

- Data communication is fast establishing itself as an important tool. In this regard, Packet Switching Technology is the influencing factor.
- Singapore established 'telepac'<sup>18</sup> which is a packet switching service in 1978. Using this service the telecommunication authority is developing other services such as the mailbox and teletext services.
- Indonesia has decided that a packet switched public data network (PSPDN) will be the answer to their communication needs and is currently experimenting with a demonstration network called PACKSATNET (Packet Satellite Network). This network is to use Indonesia's PALAPA Satellite.
- Malaysia introduced MAYPAC (Malaysian Packet Switched Public Data Network) in December 1984 and is currently implementing its phased expansion to make the service available throughout the country. Other services such as teletext,<sup>19</sup> videotex and facsimile transmission have either been established recently or will be so in 1985.
- A submarine cable linking five ASEAN countries was completed in 1983. The ASEAN submarine cable network provides high quality and relatively low cost circuits for telephone, data, telex and facsimile calls among the ASEAN countries and beyond.



- The Singapore Telecommunications has set future developments to include telemetry and telecontrol, integrated services digital control (using optical cables), videotex, office automation and mobile communication.
- The Philippines packet switched network has been in operation for some time.

From the foregoing it seems quite apparent that the communications infrastructure build up in SEA is encouraging in so far as access to international data bases is concerned. The cost of using such services is a separate matter which will determine the extent of usage.

Access to information implies a two phase process. The first is to know, or have a means of knowing, where the required information is stored. The second is to gain physical access to that information. In this context local access may be viewed as the ability of any user, no matter where he may be located, to gain access to the information he requires in a convenient manner, at reasonable cost, within a specified period of time. In order to assess the efficiency of access to information in the region it would be best to take stock of the present situation.

Libraries and information services resort to the following methods in gaining access to information.

- Normal inter-library loan arrangements based on ad hoc agreements or a formalised code of understanding. It is customary on receipt of a request to try local or national sources first before venturing to approach overseas institutions.
- Co-operative despatch service within the confines of a geographical area.
- The use of telex to hasten the process. This privilege is generally limited to only the better endowed libraries.
- Use of international inter-lending services such as The British Lending Library, The Australian National Library, The National Agricultural Library (U.S.A.), The National Medical Library (U.S.A.), Southeast Asia Medical Information Centre (SEAMIC), Japan, The Agricultural Library Network (AGLINET), FAO, Rome, and a host of other such sources.
- Writing to authors of journal articles (if their addresses are known) for reprints.

Problems in gaining access to information are many, resulting in delays which affect the efficiency of the service. Some of the problems are as follows:-

- Poor collections and the lack of joint acquisition plans has not helped the situation.



- There is a lack of an inventory of library and information resources for each country. Such an inventory will help create awareness of what is where, bringing about the possibility of utilising national resources much more than is presently done.
- The lack of a national union list of serial holdings makes the inter-library loan process a guessing game, with its attendant misfortunes.
- Slowness of response (or no response at all!!!) to requests for loan.
- Postal delays.
- Foreign currency restrictions hamper payment ability to foreign agencies.

Wijasuriya and Abdullah Kadir Bacha's<sup>20</sup> study on interlending in SEA was used as a basis by Parker<sup>21</sup> to conclude that in terms of volume, the total number of transactions a year did not justify the establishment of regional supply centre. A more practical approach suggested was to establish national inter-library lending systems.

UNESCO's ASTINFO<sup>22</sup> programme is another approach to the problem of access to information. The programme has laudable objectives and on successful implementation would undoubtedly benefit the region. Being an ambitious programme it would require co-ordinative skills of the highest order at both national and international levels. The concept, as originally conceived, has been readjusted subsequent to feedback from countries intending to participate in the programme. Success of the programme, in my opinion, would hinge on each of the participating countries resolving their respective problems of access to information on a national basis. The programme depends heavily on the establishment of national and regional networks and sub-networks, co-ordinated by designated national and regional nodes. In Malaysia, initiatives have already been made to begin the process of planning and implementing the programme at the national level only. Regardless of the international co-ordinative machinery that has been suggested, participating countries would do well to take advantage of this programme to enhance their national systems capability. In Singapore one of the main problems of local access to national information has been identified as the "lack of a national bibliographic database ..... The setting up of SILAS (Singapore Integrated Library Automated System) is aimed at developing and establishing a national bibliographic database for all types of materials."<sup>23</sup>

Access to international information as stated earlier is technically possible in all of the countries concerned. Insufficient budgets, foreign currency restrictions (particularly in the Philippines and Indonesia) and high costs are a few barriers to such access. Personal correspondence with some agencies has indicated that charges levied by libraries in the U.K., the U.S.A. and Australia were high. It is understood that if a service is offered, there are costs to be borne and those that use the service should rightly bear part of the



costs involved. While this is acknowledged, one wonders as to the component costs that are taken into account to bring this cost up so high. Just last week we received an announcement from the British Lending Library announcing a price rise. Countries, such as ours, which depend on such international services have no choice but to accept such increases, haplessly knowing full well that there would be a proportionate decrease in the use of that service. Any protest would be noted politely but the decision made would be stoutly defended. Searching alternative sources is another solution but others have already thought of the same thing and the queueing process begins.

Foreign currency restrictions in some of the countries further compound the problem of accessing overseas sources of information. Greatly aid dependent, such countries need all the help they can get.

The UNESCO coupon never did succeed as it was tagged to the U.S. currency and was not well received as payment for services rendered. Exchange has been suggested as substitutes for payment. There seems to be no follow up on the suggestion. Perhaps it would be too much of a hassle to keep records of exchange values. Another possibility is the establishment of a national coupon scheme in each country, operated by the National Library of that country. Countries requiring photocopying and other services could pay using their national coupons to the value of the service based on currency exchange rates operating at that time. The agency collecting coupons from other countries may use them to purchase publications produced in the country that issued the coupons. The coupons may also be redeemed as part of foreign aid. The above proposal is rudimentary and needs to be built upon and improved.

Many an expert, when advising developing countries, has suggested the use of intermediate technology as best befitting the situation of that country. Unfortunately intermediate technology had to be developed and the big machines that needed huge capital outlay were not necessarily the solution. With the advent of computer technology, the mainframes and minicomputers were priced so high that they were literally out of reach of many organisations in SEA. With production costs going down and subsequent lower prices of the machines, the late sixties and early seventies saw them being introduced in larger numbers in this part of the world (SEA). It is the microcomputer that is revolutionizing the use of computers in business, education and the home. Because of their low cost and the simultaneous development of software for almost any application, the potential of the use of these machines is indeed great. Mahabala<sup>24</sup> is convinced that the minicomputer should be exploited more than it is. He appeals to the computer professionals to stop being obsessed with mainframes. He advocates the small systems approach where computers should be best used in a distributed way. Vendors are urged to introduce products oriented to local areas networks with floppy discs to be used for exchange of data. He further suggests standardization in the industry for the good of all concerned.



Two seminars<sup>25,26</sup> held in the region and the papers presented reflect the growing use of minicomputers and microcomputers in the region. It seems evident that the lack of adequate application software for library and information handling purposes is a great drawback. It is in this area that the IDRC have contributed substantially. The availability of MINISIS software free of charge to developing countries, complete with adequate training, systems implementation and regular maintenance of the software is indeed a boon. Since the use of this software is tagged to the use of the HP 3000 many an institution has invested in this machine. With more than twenty installations in the region using the same software the potential for co-operation and exchange of data is indeed great. Just two weeks before this conference there was news of new software that has great promise. Called EXSYS, it is an acronym for "expert system". It is claimed that EXSYS is an expert system that possesses the knowhow to design and create high quality application software. With the use of this software the time consuming four step process (analysis, design, programming and testing) to develop application software is over. The system uses a one step process. Developed in New Zealand, it has been reported that the system has been sold to the Canterbury Public Library. There is a catch however. The software is only compatible with the Data General MV 4000 or MV 8000. The system is to be officially announced in New York on 17 April this year and in Malaysia in mid May.

While the region struggles with these modern tools, research on Artificial Intelligence (AI) has brought about the establishment of knowledge bases or expert systems. Great advances are being made. Software on establishment of expert systems on micros has made its appearance. Using expert system methodology the AACR II would soon enable the computer to catalogue material with minimal help from human operators. In America systems have been implemented which enable a user, with no experience in handling data bases, to access information effectively with the help of adequate software. Are these developments leading to a situation where

- a. with the establishment of expert systems on almost all topics,  
and,
- b. with software designed to undertake the job of the intermediary in accessing  
information,

the librarian would become obsolete?

Interest in AI is of recent origin in SEA. Singapore has started with robotics. A conference on AI is to be held in Singapore soon. As usual, technology takes time to come to the region. Perhaps in this regard we in SEA have an advantage. We let the developed countries make their mistakes first and then benefit from that experience. Does this really happen? Normally, if one looks through the literature to learn of experiences of developed situations, one reads of success stories, of possibilities and of



projected future developments. Material which evaluates systems, which warns of dangers and transfers the benefits of knowledge and experience derived is rare and difficult to obtain. It is only personal contact that makes possible transfer of experience and even then it depends on the magnanimity of the privileged.

The scenario of the future would, in my opinion, be chaotic and even detrimental to the profession if situations are allowed to develop themselves, taking the direction of the wind as it blows. There has to be concerted effort both at the national and international levels if appropriate directions are to be set for the future development of library and information science professionals and the role that libraries should play in the future. AGRIS is an example of planned direction. Despite its many drawbacks it has scored a number of successes. It is universal and involves the participation of countries all round the world, no matter what their geographic origin or economic status or political ideology. All stand to benefit from it. Its development has stopped short of just being a world bibliographic service. Efforts are currently directed towards improved document delivery capability. I firmly believe that more is possible. We just have to put our heads together to establish possible future directions which will benefit mankind. The co-operative spirit that prevails should not be killed by prejudice and selfish motives. International organisations such as yours can help in influencing such directions, taking into account the world of haves and have-nots. Another example is the spirit of candour with which IDRC has approached the problem of helping developing countries to learn to manage information. There are no strings attached to their aid. Could there be more initiatives such as these?

For the last few years, with each succeeding year of library practice, there has grown a nagging uneasiness at the back of my mind for the last few years. It was difficult trying to pin down the real issues at first. Having grappled with the problem for some time, the basic issue, it seems to me, is that librarians do not seem to have the right approach to face their challenges. Before there is a howl of protest, the above statement needs to be clarified. If one compared the practice of librarianship thirty years ago with that of to-day, fundamentally what we are doing to-day is not much different, if one excludes the application of technology and its effects on library practice. We still spend most of our valuable time in behind-the-scenes activity, processing or maintaining material. Typical organisational structures show a large proportion of resources devoted to processing activity.

Library use surveys almost always reveal that the use of libraries as a source of information is given lower priority than other sources. We are always assuming what user needs are and attempting to meet them in the way we think is best for them. We know that we serve a variety of users whose needs vary much more. Yet the products we prepare for them or the services we offer are directed to a general audience - resulting



in very little use being made of them. The catalogue, on which we spend so much of time and energy, is a glaring example of such little used products.

Are we not aware that libraries exist to serve their users? We can best serve them if we know what they need. And yet how many of us spend our energies towards this end. Having done a one-time survey we use the results of that survey to guide us for the next few years. With changing times, shifting interests, adaptation to technology and a whole host of other factors, user needs are always changing. We have not yet worked out techniques or methodologies to keep in tune with these changing needs. If so are we not fooling ourselves in thinking that we are meeting our objectives - to satisfy user needs.

Our spheres of activity are narrow. Changing times and new technology bring new challenges. Our scope of activity needs to be readjusted from time to time keeping in mind that our basic purpose would remain the same. It is this lack of readjustment that has seen the commercialization of certain spheres of activity, once thought to be the domain of the library. If we do not respond to these challenges quickly then, as has been predicted, one could well see the demise of the librarian. The library would remain, but perhaps more as a data centre operated by the information technology professionals. I am given to understand that the term information technology comprises of those involved with computers and communications technology. The librarian does not figure in this group. We are being edged out. I have always maintained that society will accord a profession its rightful status based on the benefits derived by it from that profession. If librarians do not respond and adapt to their situation quickly, the end is nigh! Perhaps not so the librarians in SEA. Being still behind in the development of our library system we may tarry on for a little while longer. It may even be that the demise may come prematurely. Whatever the situation - can we do something about it?

I began by painting a rosy picture of the SEA situation as far as information resources were concerned. I seem to be ending on a pessimistic note. I shall now try to change that. In my own mind some ideas are forming on the approach to this problem. Even as I venture to state them I cannot help but wonder whether the brain washing I have received might still influence me and clutter my thinking. Nevertheless one has to try. I would like to share my thoughts with you knowing that they can be improved upon or rejected totally.

- a. We must be sure in our minds what we mean by information. It is a very vague term. We must delineate the parameters of information that apply to our profession.
- b. Our objective must be clear and should constantly guide us. I believe that we must not only be a "master of the sources of information" but also be able to



manage information. Management implies manipulation and interpretation. Manipulation implies skills in handling information. Interpretation is indicative of the relevance of information to an expressed need. Our major objective then would be to bring together the relevant information or its sources and the seeker of that information.

- c. The computer and other artifacts of modern technology are mere tools to aid us to achieve our objectives. We must shed our obsession with them by regarding them as a means and not as an end in itself. Skillful handling of these tools is a necessary pre-requisite if we are to use them effectively.
- d. We must interact more with the user. Library to user networks need to be formed. We have to improve our knowledge of social and behavioural skills to get to know the user better.
- e. The division of users into homogenous groups will aid in the determination of the subject scope to be handled and better information management.
- f. Our methods of analysing information need to be improved. Use of bibliometric methods needs to be increased.
- g. A major part of the processing services should be relegated to para-professionals or technicians.
- h. We should spend more time processing information rather than its containers.
- i. The training of our professionals should be reoriented. Like the medical profession, which has general practitioners and specialists, we should aim for the same.

If the above thoughts of mine reflect ignorance of existing library practice in its entirety, I shall stand to learn by your reactions. As a librarian my contributions to society must be meaningful. If my own conscience bothers me it will not be long before society recognises this. In my own mind I have to find solutions to the many questions I have posed. Your reactions would assist me greatly in assessing the validity of my current thinking.



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